



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

**SEP 3 0 2009**

REPLY TO THE ATTENTION OF:

**AE-17J**

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Thomas Brungard  
HSSE Manager  
BP Husky Refining LLC  
4001 Cedar Point Road  
Oregon, Ohio 43616

Re: Finding of Violation

Dear Mr. Brungard:

This is to advise you that the U.S. Environmental Protection Agency has determined that BP Husky Refining LLC (BP Husky or facility) is in violation of the Clean Air Act (CAA). A list of the requirements violated is provided below. A Finding of Violation (FOV) for these violations is being issued and is enclosed for your review.

The CAA requires that major sources of air toxic, or hazardous air pollutant, emissions comply with standards appropriate for the source's category. These National Emission Standards for Hazardous Air Pollutants (NESHAP) for source categories are required by Section 112 of the CAA, 42 U.S.C. § 7412, with implementing regulations found at 40 CFR Part 63. The NESHAP for Petroleum Refineries are found at 40 CFR § 63.640 and 63.1560 and specify control of, among other things, process vents and equipment leaks. Facilities subject to an individual NESHAP subpart are also subject to certain NESHAP general provisions found in Subpart A.

Section 111(b)(1)(A) of the CAA, 42 U.S.C. § 7411(b)(1)(A), required EPA to establish and publish a list of stationary source categories which "cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." Pursuant to Section 111(b)(1)(B) of the Act, EPA has established technology-based standards, termed New Source Performance Standards (NSPS), for 68 new source categories. Two standards, Subparts VV and GGG, found at 40 CFR §§ 60.480 and 60.592, respectively, apply to Equipment Leaks of Volatile Organic Compounds (VOC). Facilities subject to an individual NSPS subpart are also subject to certain NSPS general provisions found in Subpart A.

The purpose of these requirements is to reduce emissions that can compromise public health and welfare. Specifically, these requirements ensure that volatile organic compounds and

hazardous air pollutants are being controlled to reduce the potential harm to the human respiratory system and reduce the risk of cancer.

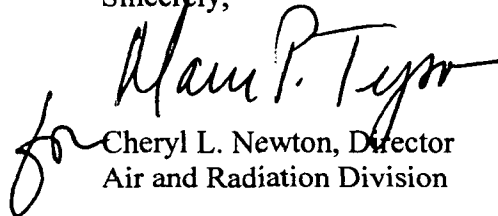
EPA finds that BP Husky has violated the NESHAP for Petroleum Refineries and the NSPS for Equipment Leaks of VOC as those standards apply to flares. EPA also finds that BP Husky has violated the related NESHAP general provisions found at 40 CFR §§ 63.6(e) and 63.11(b), and related NSPS general provisions found at 40 CFR §§ 60.11(d) and 60.18(b).

Section 113 of the CAA gives EPA several enforcement options to resolve these violations, including: issuing an administrative compliance order, issuing an administrative penalty order, bringing a judicial civil action, and bringing a judicial criminal action.

We are offering you the opportunity to request a conference with us about the violations alleged in the FOV. A conference should be requested within 10 days following receipt of this notice. A conference should be held within 30 days following receipt of this notice. This conference will provide you a chance to present information on the identified violations, any efforts you have taken to comply and the steps you will take to prevent future violations. Please plan for your facility's technical and management personnel to take part in these discussions. You may have an attorney represent and accompany you at this conference.

The EPA contact in this matter is Brian Dickens. You may call him at (312) 886-6073 if you wish to request a conference. EPA hopes that this FOV will encourage BP Husky to comply with the requirements of the Clean Air Act.

Sincerely,

  
Cheryl L. Newton, Director  
Air and Radiation Division

Enclosure

cc: Robert Hodanbosi  
Ohio Environmental Protection Agency

**United States Environmental Protection Agency  
Region 5**

**IN THE MATTER OF:**

**BP Husky Refining LLC,  
Oregon, Ohio**

**Proceedings Pursuant to  
the Clean Air Act,  
42 U.S.C. §§ 7401 *et seq.***

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**FINDING OF VIOLATION**

**EPA-5-09-OH-25**

**FINDING OF VIOLATION**

The U.S. Environmental Protection Agency finds that BP Husky Refining, LLC (BP Husky) is violating certain provisions of the New Source Performance Standards, 40 C.F.R. Part 60 (NSPS), and the National Emission Standards for Hazardous Air Pollutants for Source Categories, 40 C.F.R. Part 63 (NESHAP for Source Categories), including, but not limited to: 40 C.F.R. § 60.11(d); 40 C.F.R. § 60.18(b); 40 C.F.R. § 63.6(e)(1)(i); 40 C.F.R. § 63.11(b). These violations arise out of BP Husky's improper operation of two of its refinery flares.

**Statutory and Regulatory Authority**

This Finding of Violation is based on the following statutory and regulatory provisions:

**New Source Performance Standards (NSPS)**

1. Section 111(b)(1)(A) of the Act, 42 U.S.C. § 7411(b)(1)(A), required EPA to establish and publish a list of stationary source categories which "cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." Pursuant to Section 111(b)(1)(B) of the Act, EPA has established technology-based standards for 68 new source categories. General NSPS provisions applying to source categories are set forth at 40 C.F.R. Part 60, Subpart A, §§ 60.1-60.19. NSPS general provisions apply to all NSPS source categories unless explicitly exempted in a specific subpart.

**40 C.F.R. § 60.11(d): Good Air Pollution Control Practices**

2. The general NSPS provision at Section 60.11(d) provides as follows:

At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected

facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.

#### **40 C.F.R. § 60.18(b): General Requirements for Flares**

3. NSPS subparts that require or allow the use of a flare as a control device reference 40 C.F.R. § 60.18(b) for the applicable compliance parameters for the operation and maintenance of flares. Section 60.18(b) references specific provisions in Section 60.18 (c) – (f), which set forth flaring requirements. Section 60.18(c)(1) provides that “[f]lares shall be designed for and operated with no visible emissions . . .” Section 60.18(c)(3)(ii) provides that flares shall be used only with the net heating value of the gas being combusted at 300 BTU or greater if the flare is steam-assisted. Section 60.18(c)(4) provides that steam-assisted flares “shall be designed for and operated with an exit velocity . . . less than . . . 60 feet/sec . . .” Section 60.18(d) provides that “[o]wners and operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.”

#### **40 C.F.R. Part 60, Subpart VV: NSPS Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry**

4. Certain subparts under NSPS and NESHAP for source categories (40 C.F.R. Part 63) which regulate equipment leaks of volatile organic chemicals (VOC) require compliance with 40 C.F.R. Part 60, Subpart VV. Under Subpart VV, the group of all equipment within a process unit is an affected facility. 40 C.F.R. § 60.480(a)(2). Equipment includes each valve, pump, compressor, pressure relief device, sampling system, and open-ended line in VOC service. 40 C.F.R. § 60.481.

5. The Subpart VV regulation includes requirements for control devices, including flares, used in conjunction with control of equipment leaks. Section 60.482-10 sets forth standards for closed vent systems and control devices used to comply with the provisions of Subpart VV. Section 60.482-10(d) provides that flares used to comply with Subpart VV must comply with Section 60.18 of Part 60, Subpart A, General Provisions. Section 60.482-10(e) provides that owners of control devices, including flares, that are used to comply with the requirements of Subpart VV, “shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.”

#### **40 C.F.R. Part 60, Subpart GGG: NSPS Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries**

6. EPA promulgated the final standards of performance for equipment leaks of volatile organic compounds (VOC) in the petroleum refining industry on May 30, 1984. 49 Fed. Reg. 22598. An affected facility under Subpart GGG includes “all the equipment within a process unit” of a refinery. Under Subpart GGG, equipment includes each valve, pump, pressure relief device, open-ended valve or line or other connector within VOC service (that is, contain at least 10% VOC by weight; 49 Fed. Reg. at 22598).

Pursuant to 40 C.F.R. § 60.592(a), each owner or operator subject to Subpart GGG is directed to comply with the Standards of 40 C.F.R. Part 60, Subpart VV, at §§ 60.482-1 to 60.482-10. Further, because Subpart GGG is a NSPS subpart, all of the general provisions under Subpart A apply to sources subject to Part 60, Subpart GGG. Therefore, Section 60.11(d), which requires compliance with good air pollution control practices for minimizing emissions, applies to sources subject to Subpart GGG.

**National Emission Standards for Hazardous Air Pollutants for Source Categories, 40 C.F.R. Part 63 (NESHAP for Source Categories)**

7. The Clean Air Act Amendments of 1990 amended Section 112 of the Act to implement a technology-based approach to the control of hazardous air pollutants based upon the control of categories of sources which emit the greatest amount of HAPs. Section 112(b) of the Act lists 188 HAPs that cause adverse health or environmental effects. Section 112(d) of the Act requires the Administrator to promulgate regulations establishing emissions standards for each category or subcategory of major and area sources of HAPs. The General Provisions for the Part 63 NESHAP standards are set forth at 40 C.F.R. Part 63, Subpart A, §§ 63.1 - 63.15.

**40 C.F.R. § 63.6(e)(1)(i): Good Air Pollution Control Practice**

8. The NESHAP for Source Categories general provision at Section 63.6(e)(1)(i) provides as follows:

Operation and maintenance requirements. (1)(i) At all times, including periods of startup, shutdown, and malfunction, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. During a period of startup, shutdown, or malfunction, this general duty to minimize emissions requires that the owner or operator reduce emissions from the affected source to the greatest extent which is consistent with safety and good air pollution control practices. The general duty to minimize emissions during a period of startup, shutdown, or malfunction does not require the owner or operator to achieve emissions levels that would be required by the applicable standard at other times if this is not consistent with safety and good air pollution control practices, nor does it require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved.

**40 C.F.R. § 63.11(b): Flare Requirements**

9. 40 C.F.R. § 63.11 addresses requirements pertaining to the operation of flares. These requirements include, Section 63.11(b)(4), which provides that “[f]lares shall be designed for and operated with no visible emissions . . .”; Section 63.11(b)(6)(ii), which provides that steam-assisted flares “shall be used only with the net heating value of the gas being combusted at . . . 300 BTU/scf or greater . . .”; and, Section 63.11(b)(7)(i),

which provides that steam-assisted flares “shall be designed and operated with an exit velocity less than . . . 60 ft/sec . . .” Further, Section 63.11(b)(1) provides that “[o]wners or operators using flares to comply with the provisions of this part shall monitor these control devices to assure that they are operated and maintained in conformance with their designs.”

#### **40 C.F.R. Part 63, Subpart CC: National Emission Standards for Hazardous Air Pollutants: Petroleum Refineries**

10. EPA promulgated the NESHAP for petroleum refineries on August 18, 1995, based on EPA’s determination that petroleum refineries are major sources of HAP emissions. 60 Fed Reg. 43244. Subpart CC applies to petroleum refining process units and to related emission points. Section 63.640(c) provides that for “the purposes of this subpart, the affected source shall comprise all emission points, in combination,” listed at Section 63.640(c)(1) through (c)(7). These emission points include miscellaneous process vents and all equipment leaks. 40 C.F.R. §§ 63.640(a) and (c)(1) and (4).

11. Section 63.643 sets forth requirements for Group 1 miscellaneous process vents. A Group 1 miscellaneous process vent means a process vent for which the total organic HAP concentration is greater than or equal to 20 parts per million by volume and the total VOC emissions are greater than 33 kilograms per day for existing sources or 6.8 kilograms per day for new sources. 40 C.F.R. § 63.641. Owners or operators of Group 1 miscellaneous process vents have two control options under Section 63.643(a) (1) and (2). The pertinent control option in this matter is 40 C.F.R. § 63.643(a)(1), which requires the reduction of emission of organic HAP’s using a flare that meets the requirements of Part 60, Subpart A, Section 63.11(b). These requirements include 40 C.F.R. § 63.11(b)(1), which requires that flares are operated in conformance with their designs.

12. Section 63.648 sets forth requirements for equipment leaks. 40 C.F.R. § 63.648(a) provides that “[e]ach owner or operator of an existing source subject to the provisions of this subpart shall comply with the provisions of 40 C.F.R. part 60 subpart VV....” As stated above, Section 60.482-10(e) of 40 C.F.R. Part 60, Subpart VV, requires that owners of flares that are used to comply with the requirements of Subpart VV “shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.”

13. Table 6 to 40 C.F.R. Part 63, Subpart CC, titled “General Provisions Applicability to Subpart CC,” specifically provides that Section 63.6(e) of the General Provisions applies to affected sources under Subpart CC (except for “Group 2 emission points”). Table 6 further provides that 40 C.F.R. § 63.11(b) applies to all affected sources regulated by Subpart CC. As stated above, 40 C.F.R. § 63.6(e)(1) is the good air pollution control practice provision for NESHAPs for source categories and 40 C.F.R. § 63.11 sets forth operating and maintenance parameters (including compliance with design) for flares.

**40 C.F.R. Part 63, Subpart UUU: National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units (CCU), Catalytic Reforming Units (CRU), and Sulfur Recovery Units (SRU).**

14. EPA promulgated Part 63, Subpart UUU, known as the Refinery MACT II, on April 11, 2002. 67 Fed. Reg. 17762. Subpart UUU was subsequently amended by a direct final rule on February 9, 2005. 70 Fed. Reg. 6930. The NESHAP establishes emission limits for HAPs emitted from vents on the three types of process units identified above. Section 63.1562(a), provides that Subpart UUU applies to each new, reconstructed, or existing affected source at a petroleum refinery. Section 63.1562(b) provides that an affected source under Subpart UUU includes process vents on catalytic reforming units that are associated with the regeneration of catalyst.

15. Section 63.1566 sets forth requirements for organic HAP emissions from catalytic reforming units. Specifically, 40 C.F.R. § 63.1566(a)(1)(i), which is one of two options available to control vent emissions of total organic compounds (TOC), provides that the TOC be directed to a flare meeting the control device requirements of 40 C.F.R. § 63.11(b). Further, the section references Table 15 to Subpart UUU, which affirms the applicability of Section 63.11(b).

16. Table 44 to Subpart UUU provides that certain General Provisions from 40 C.F.R. Part 63, Subpart A, apply to affected sources regulated under Subpart UUU. These include 40 C.F.R. § 63.6(e)(1)-(2) and 40 C.F.R. § 63.11. As stated above, 40 C.F.R. § 63.6(e)(1) is the good air pollution control practice provision for NESHAPs for source categories and 40 C.F.R. § 63.11 sets forth operating and maintenance parameters (including compliance with design) for flares.

**Factual Allegations and Explanation of Violations**

17. BP Husky Refining, LLC (BP Husky), owns the refinery located in Oregon, Ohio that was formerly owned and operated by BP Products North America Inc. – Toledo Business Unit, and is identified by Ohio Environmental Protection Agency Facility ID 04-48-020007 (Toledo Refinery). BP Husky is owned by BP PLC and Husky Energy Inc. The Toledo Refinery is operated by a subsidiary of BP PLC.

18. The Title V permit for the Toledo Refinery at pages 782-83, provides that process unit P019, Catalytic Reformer 1, is subject to: 40 C.F.R. Part 63, Subpart UUU; 40 C.F.R. Part 63, Subpart CC (equipment leaks). Therefore, process unit P019 is subject to, among other things, the good air pollution control practices provisions and the flare operation and maintenance provisions at: 40 C.F.R. § 60.18(b); 40 C.F.R. § 63.6(e)(1)(i); 40 C.F.R. § 63.11(b).

19. The Title V permit for the Toledo Refinery at pages 786-88, provides that process unit P020, Catalytic Reformer 2, is subject to: 40 C.F.R. Part 63, Subpart UUU; 40 C.F.R. Part 63, Subpart CC (equipment leaks); and 40 C.F.R. Part 60, Subpart GGG. Therefore, process unit P020 is subject to, among other things, the good air pollution

control practices provisions and the flare operation and maintenance provisions at: 40 C.F.R. § 60.11(d); 40 C.F.R. § 60.18(b); 40 C.F.R. § 63.6(e)(1)(i); 40 C.F.R. § 63.11(b).

20. The Title V permit for the Toledo Refinery at pages 794-95, provides that process unit P022, Alkylation Unit 2, is subject to: 40 C.F.R. Part 63, Subpart CC (process vents and equipment leak provisions); and 40 C.F.R. Part 60, Subpart GGG. Therefore, process unit P022 is subject to, among other things, the good air pollution control practices provisions and the flare operation and maintenance provisions at: 40 C.F.R. § 60.11(d); 40 C.F.R. § 60.18(b); 40 C.F.R. § 63.6(e)(1)(i); 40 C.F.R. § 63.11(b).

21. The Title V permit for the Toledo Refinery at pages 902-03, provides that process unit P028, "A" Train Diesel Hydrotreater, is subject to: 40 C.F.R. Part 63, Subpart CC (equipment leaks); and 40 C.F.R. Part 60, Subpart GGG. Therefore, process unit P028 is subject to, among other things, the good air pollution control practices provisions and the flare operation and maintenance provisions at: 40 C.F.R. § 60.11(d); 40 C.F.R. § 60.18(b); 40 C.F.R. § 63.6(e)(1)(i); 40 C.F.R. § 63.11(b).

22. The Toledo Refinery uses the East and West flares to control emissions from process units, including emissions resulting from malfunctions and pressure relief episodes. Each flare has its own header, but both headers are connected to "balance" the vent gases. Regulated vent streams can flow to either or both the East and West flares.

23. The East and West flares are steam-assisted, which means that steam is added to the waste, or vent gas stream to enhance combustion and prevent the formation of smoke. Steam is added in proportion to the amount of vent gas, and it is common practice to measure to the amount of steam as a ratio of the mass of steam per unit mass of vent gas (lb/lb).

24. On August 14, 2008, the Toledo Refinery provided information to EPA in response to an EPA information request, including operating data on the East and West flares for the period from January 1, 2006 through June 30, 2008, provided as Attachments 1 & 2 of the response, and flare design documents, provided as Attachment 7 of the response.

25. The Toledo Refinery's Instruction Manual for the East and West flares, written by NAO, Inc., the flares' manufacturer, states that "the amount of steam needs to be regulated in relation to the amount of relief gas," and sets forth the design vent gas flow rate and associated steam flow rate. Specifically, it states that the flare's design flowrates are 60,000 lb/hr of steam and 150,000 lb/hr of vent gas. These flowrates result in a steam-to-vent gas ratio of approximately 0.4 lb steam/lb vent gas at these design conditions.

26. The steam-to-vent gas ratio set forth in the Instruction Manual for the flares is consistent with good engineering practice as set forth in industry, academic, and government publications concerning the operation of flares, e.g.:



- a. In March 1997, the American Petroleum Institute (API) released a report entitled "Guide for Pressure-Relieving and Depressuring Systems." The document discusses proper practices for venting organic material. With respect to smoke suppression at steam-assisted flares, the authors of the document state, "the amount of steam required is primarily a function of the gas composition, flow rate and steam pressure and flare tip design and is normally in the range of 0.25 to 1.0. [lb/lb]".
- b. In July 1983, EPA released report EPA 600/2-83-052, titled Flare Efficiency Study. This study, partially funded by EPA and the Chemical Manufacturers Association (CMA), included various tests to determine the combustion efficiency and hydrocarbon destruction efficiency of flares under a variety of operating conditions. The tests performed included a wide range of steam flows and steam-to-vent gas ratios. The data collected showed decreasing combustion efficiencies when the steam-to-vent gas ratio increased. The report's authors indicated they believed excessive steam-to-vent gas ratios caused steam quenching of the flame during the tests which resulted in lower combustion efficiency. The report on page 37 states "This data suggests that steam-to-relief gas ratios ranging from 0.4 to 1.5 yield the best combustion efficiencies." The report also states on page 28 that steam-to-vent gas ratios above 3.07, "are regarded as being higher than those that would represent good engineering practice."

27. The Toledo Refinery's Instruction Manual also states the minimum steam to be supplied to the upper portion of the flare tip as "cooling steam" is 300 lb/hr during low vent gas flow. The Manual also warns that excess steam can "quench the flame" and that steam must be added in proportion to the waste gas flow. According to the August 14, 2008 information request response, the Toledo Refinery typically applied a level of upper cooling steam commensurate with the vent gas on the East flare, but it maintained approximately 13,000 lb/hr on the West flare. This amount of steam applied to the West flare is far in excess of the level prescribed by the Manual.

28. Another document that the Toledo Refinery supplied is titled "Operational Requirement/Technical Information." The document states that Toledo Refinery should restrict center steam to no more than 5000 lb/hr. According to the August 14, 2008 information request response, Toledo Refinery operated the East flare with center steam typically above 5000 lb/hr, and at times exceeded 12,000 lb/hr. This amount of steam applied to the East flare is far in excess of the level prescribed by the Operational Requirement/Technical Information document.

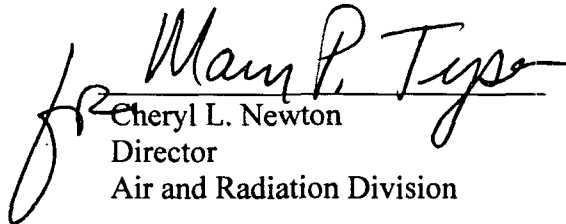
29. The Toledo Refinery occasionally provided steam to the flares in excess of their design minimum rates and design steam-to-vent gas ratio. This excess steam resulted in steam-to-vent gas ratios at the East and West flares at times exceeding 10 lb/lb as four-hour averages.

30. This failure to adhere to the flare's design and good air pollution control practices resulted in excess steam being added on several days in 2006, 2007, and 2008, which likely reduced the combustion efficiency of the flares. The reduction in combustion efficiency resulted in increased emissions. The Toledo Refinery's actions are violations of the good air pollution control practices provisions and the flare operation and maintenance provisions under NSPS and NESHAP, as well as the underlying violations of NSPS Subpart GGG and NESHAP Subparts CC and UUU.

#### **Environmental Impact of Violations**

31. These violations have caused or can cause excess emissions of VOCs and/or HAPs. VOC cause ground level ozone, which can irritate the human respiratory system and reduce lung function. The health effects from HAPs include birth defects, cancer, and respiratory ailments.

09/30/09  
Date

  
Cheryl L. Newton  
Director  
Air and Radiation Division

## CERTIFICATE OF MAILING

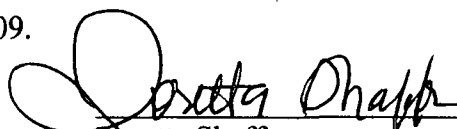
I, Loretta Shaffer, certify that I sent a Notice and Finding of Violation, No. EPA-5-09-OH-25, by Certified Mail, Return Receipt Requested, to:

Thomas Brungard  
HSSE Manager  
BP Husky Refining LLC  
4001 Cedar Point Road  
Oregon, Ohio 43616

I also certify that I sent copies of the Finding of Violation and Notice of Violation by first class mail to:

Robert Hodanbosi, Chief  
Division of Air Pollution Control  
Ohio Environmental Protection Agency  
Lazarus Government Center  
PO Box 1049  
Columbus, Ohio 43216

on the 1<sup>ST</sup> day of October, 2009.

  
Loretta Shaffer  
AECAS, MN-OH

CERTIFIED MAIL RECEIPT NUMBER: 7001 0320 0006 0192 1536